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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,455	07/18/2003	Ravi Kanth V. Kothuri	19111.0098	1126
23517	7590	08/21/2006	EXAMINER	
BINGHAM MCCUTCHEN LLP			FERRIS III, FRED O	
3000 K STREET, NW				
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/621,455	V. KOTHURI, RAVI KANTH	
	Examiner Fred Ferris	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 18 July 2003.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-23 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-23 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 18 July 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date: _____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>10/22/03</u>	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

1. *Claims 1-23 have been presented for examination based on applicant's disclosure filed 18 July 2003. Claims 1-23 are currently pending in this application and stand rejected by the examiner.*

Drawings

2. *Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.*

Specifically the features disclosed in Figure 1 are disclosed in the specification as being a simple R-tree and should therefore be labeled as prior art since R-trees are well known in the art.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. *Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.*

With regard to independent claims 1, 19, 20, and 22, it is unclear from the language of the claim what the result is actually used for. Specifically, claim 1, for example, recites determining a relationship between geometric objects by defining an exterior approximation for a first and second geometry, computing the maximum distance between the approximations, comparing the distances, and determining if a filter condition is satisfied. The specification indicates that the claimed subject matter is drawn to spatial and geographic databases, but no such features or limitations are specifically recited in the language of the claims, and it is unclear how the compared geometries and resulting filter condition is ultimately used in a spatial or geographic database. Dependent claims inherit the defect of the claims from which they depend.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. ***Claims 1-23 are rejected under 35 U.S.C. 101 because the claimed invention is drawn to non-statutory subject matter.***

Per claims 1-23: The Examiner submits that, in view of the language of the claims, method claim 1, for example, merely recites a and abstract mathematical construct and does not appear to recite a tangible result. In this case the result appears

to merely be a calculated numerical representation of the recited method steps. The examiner submits that in order to establish a practical application, there must be either a physical transformation, or a useful, concrete and tangible result. Data transformation is not the same as a physical transformation. In this instance, there does not appear to be a tangible result. Here, the result of comparing the computed maximum distances is simply a mathematical computation resulting in an un-stored and un-applied number, not a physical transformation. Hence the claimed "determining" is simply a thought or computation, and not in and of itself a tangible result. It is not until the "determined geometry" is applied in a meaningful way that it has real world value and becomes a tangible result.

MPEP 2106 recites the following:

*"A. Identify and Understand Any Practical Application Asserted for the Invention
The claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and tangible result." State Street, 149 F.3d at 1373, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of "real world" value, as opposed to subject that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (Brenner v. Manson, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96); In re Ziegler, 992, F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993)). Accordingly, a complete disclosure should contain some indication of the practical application for the claimed invention, i.e., why the applicant believes the claimed invention is useful.*

Apart from the utility requirement of 35 U.S.C. 101, usefulness under the patent eligibility standard requires significant functionality to be present to satisfy the useful result aspect of the practical application requirement. See Arrhythmia, 958 F.2d at 1057, 22 USPQ2d at 1036. Merely claiming nonfunctional descriptive material stored in a computer-readable medium does not make the invention eligible for patenting. For example, a claim directed to a word processing file stored on a disk may satisfy the utility requirement of 35 U.S.C. 101 since the information stored may have some "real world" value. However, the mere fact that the claim may satisfy the utility requirement of 35 U.S.C. 101 does not mean that a useful result is achieved under the practical application requirement. The claimed invention as a whole must produce a "useful, concrete and tangible" result to have a practical application.

Although the courts have yet to define the terms useful, concrete, and tangible in the context of the practical application requirement for purposes of these guidelines, the following examples illustrate claimed inventions that have a practical application because they produce useful, concrete, and tangible result:

- Claims drawn to a long-distance telephone billing process containing mathematical

algorithms were held to be directed to patentable subject matter because "the claimed process applies the Boolean principle to produce a useful, concrete, tangible result without pre-empting other uses of the mathematical principle." *AT & T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1358, 50 USPQ2d 1447, 1452 (Fed. Cir. 1999);

- "[T]ransformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces a useful, concrete and tangible result' -- a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades." *State Street*, 149 F.3d at 1373, 47 USPQ2d at 1601; and

- Claims drawn to a rasterizer for converting discrete waveform data samples into anti-aliased pixel illumination intensity data to be displayed on a display means were held to be directed to patentable subject matter since the claims defined "a specific machine to produce a useful, concrete, and tangible result." *In re Alappat*, 33 F.3d 1526, 1544, 31 USPQ2d 1545, 1557 (Fed. Cir. 1994).

A process that consists solely of the manipulation of an abstract idea is not concrete or tangible. See *In re Warmerdam*, 33 F.3d 1354, 1360, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). See also *Schrader*, 22 F.3d at 295, 30 USPQ2d at 1459. Office personnel have the burden to establish a *prima facie* case that the claimed invention as a whole is directed to solely an abstract idea or to manipulation of abstract ideas or does not produce a useful result. Only when the claim is devoid of any limitation to a practical application in the technological arts should it be rejected under 35 U.S.C. 101. Compare *Musgrave*, 431 F.2d at 893, 167 USPQ at 289; *In re Foster*, 438 F.2d 1011, 1013, 169 USPQ 99, 101 (CCPA 1971). Further, when such a rejection is made, Office personnel must expressly state how the language of the claims has been interpreted to support the rejection."

Claims 20-21 are further rejected as claiming a program product drawn to nonstatutory descriptive material since the claimed "program product" does not appear to impart any functionality. (i.e. not a computer program product or executable instructions tangibly embodied on a computer-readable medium that when executed by a processor to perform the claimed subject matter)

MPEP 2106 recites the following supporting rational for this reasoning:

"Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data. Both types of "descriptive material" are nonstatutory when claimed as descriptive material per se. *Warmerdam*, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized."

In this case, applicants have not claimed computer (program) code that is embodied on a computer-readable medium and specifically employed as a computer component to be executed on a processor and perform the claimed limitations.

Dependent claims inherit the defect of the claims from which they depend.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. *Claims 1-23 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims of copending Application No. 10/397,529 and 10/397,530. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter of*

claims 1-23 in the present invention, appear as a subset of the claimed subject matter recited in claims 1-20 and 1-27 in Application No. 10/397,529 and 10/397,530 respectively.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102/103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. *Claims 1-23 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US Patent 6,438,269 issued to Kim et al.*

Regarding independent claims 1, 19, 20, and 22: These claims as presently drafted appear to “read on” the conventional method of comparing data geometries with a query geometry described by Kin in the background of the invention (See: Fig. 1, CL1-L36-65). The conventional method determines a minimum bounding rectangle of the query geometry, determines a minimum bounding rectangle of each geometry, identifies candidate data geometries by determining whether data geometries fulfill a first filter condition with respect to the query geometry by comparing the minimum bounding rectangles until no more data remains. (Fig. 1)

Regarding dependent claims 2-18, 21, and 23: Although Kim does not explicitly show ordering candidate data geometries by increasing distance for the query geometry, since the method of the prior art compares MBR's, the distances by necessity must be computed. Also, it is very well known in the art to order candidate items by their distance to an item of interest. Hence, in the alternative, it would have been obvious to one of ordinary skill in the art to include this feature having knowledge of the prior art (Kim) in order to locate the nearest neighboring data geometry to the query geometry. Kim also teaches mathematically calculating the distance between query geometry and candidate data geometries when no entries remain by showing that the choice of the candidate object is repeatedly "looped" (See: CL4-L10-22)

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. *Claims 1-23 are rejected under 35 U.S.C. 102(b) as being anticipated by “Efficient Processing of Large Spatial Queries Using Interior Approximations”, Kothuri et al, July 2001 (of record) or “Quadtree and R-tree Indexes in oracle Spatial: A Comparison using GIS Data”, Kothuri et al, ACM SIGMOD ‘2002, June 4-6, 2002.*

Regarding independent claims 1, 19, 20, and 22: Both Kothuri 01' and 02' anticipate the elements of the present invention as presently claimed as follows:

- Method, system, code for determining a with-distance relationship between a first geometry object and a second geometry object: (Kothuri 01': Sections 1.0-4.0, 02': Sections 1.0-2.3)

- defining an exterior approximation of the first geometry and the second geometry; (Kothuri 01': Sections 1.0-3.1, 02': Sections 2.3-3.5, Fig. 1)

- computing a maximum distance between the exterior approximations; (Kothuri 01': Sections 3.0-4.0, 02': Sections 3.5-4.2.2)

- comparing the computed maximum distance with a first predetermined distance to determine whether the second geometry satisfies a first filter condition with respect to the first geometry; (Kothuri 01': Sections 3.1-5.3, 02': Sections 3.1-4.2.2, Fig. 1)

Regarding dependent claims 2-18, 21, and 23: Both Kothuri 01' and 02'
anticipate the elements of the dependent claims as follows:

- Approximating expanded interior, circles, rectangles: (Kothuri 01': Sections 1.0-4.0, 02': Sections 2.3-3.5, Fig. 1)

- Identifying center, min/max distance/radius, span: (Kothuri 01': Sections 3.5-4.2.2, 02': Sections 3.5-4.2.2)

- Filter condition, R-tree, geodetic data: (Kothuri 01': Sections 3.1-5.3, 02': Sections 3.1-4.2.2, Fig. 1)

Conclusion

8. *The prior art made of record not relied upon is considered pertinent to applicant's disclosure, careful consideration should be given prior to applicant's response to this Office Action.*

US Patent 6,263, 334 issued to Fayyad et al teaches high dimensional nearest neighbor queries in databases.

US 6,778,981 issued to Lee et al

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 571-272-3778 and whose normal working hours are 8:30am to 5:00pm Monday to Friday. Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 571-272-3700. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached at 571-272-2279. The Official Fax Number is: (571) 272 8300

*Fred Ferris, Primary Examiner
Simulation and Emulation, Art Unit 2128
U.S. Patent and Trademark Office
Randolph Building, Room 5D19
401 Dulany Street
Alexandria, VA 22313
Phone: (571-272-3778)
Fred.Ferris@uspto.gov
August 16, 2006*



*Fred Ferris
Primary Examiner*